

(19) Europäisches Patentamt

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(11) EP 1 385 308 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
28.01.2004 Bulletin 2004/05

(51) Int Cl. 7: H04L 25/14

(21) Application number: 02255121.2

(22) Date of filing: 22.07.2002

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
IE IT LI LU MC NL PT SE SK TR
Designated Extension States:
AL LT LV MK RO SI

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Designated Contracting States:
AT BE CH CY DE DK ES FI FR GR IE IT LU MC NL
PT SE TR CZ EE BG SK LI

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A K S

DOCKET TO 605B
FOR US ART CTR
BY 06 August 2004

(54) Method and apparatus for synchronizing multiple serial datastreams in parallel

(57) A circuit for receiving multiple serial datastreams in parallel is disclosed. A bit clock is recovered from each data stream, there being one data bit for each transition of the clock signal both positive and negative going. The phases of the bit clocks are compared and are adjusted by 180 degrees so that the positive going

edges of all occur close to each other. The bits of each stream are assembled into words under the control of a word clock. In one embodiment a common word clock is derived from the set of bit clocks as a whole. In another embodiment each stream is provided with its own word clock which is aligned to positive edges of the respective bit clocks that are close to each other.

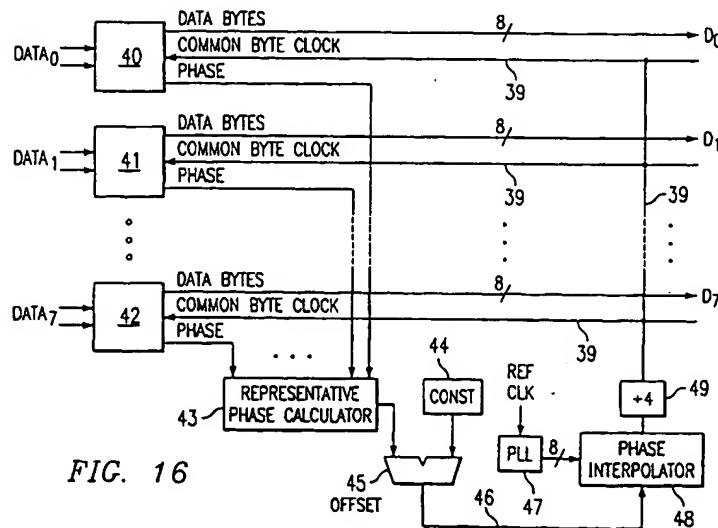


FIG. 16



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EUROPEAN SEARCH REPORT

Application Number
EP 02 25 5121

DOCUMENTS CONSIDERED TO BE RELEVANT					
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)		
Y	EP 0 996 262 A (TEXAS INSTRUMENTS FRANCE ; TEXAS INSTRUMENTS INC (US)) 26 April 2000 (2000-04-26) * abstract * * paragraph [0017] * * paragraph [0043] - paragraph [0044] * * paragraph [0062] - paragraph [0064] * ---	1-9	H04L25/14		
Y	US 4 433 424 A (TABER LOUIS ET AL) 21 February 1984 (1984-02-21) * abstract * * column 1, line 65 - column 2, line 46 * * claim 1 * ---	1-9			
A	US 4 677 618 A (HAAS LEE C ET AL) 30 June 1987 (1987-06-30) * column 2, line 46 - line 68 * * column 6, line 49 - column 7, line 15 * * figure 9 * ---	1-9			
A	US 5 920 897 A (WEST ERIC T ET AL) 6 July 1999 (1999-07-06) * abstract * * column 3, line 35 - column 4, line 35 * * figure 4B * -----	1-9	<table border="1"> <tr> <td>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</td> </tr> <tr> <td>H04L H04J H04B</td> </tr> </table>	TECHNICAL FIELDS SEARCHED (Int.Cl.7)	H04L H04J H04B
TECHNICAL FIELDS SEARCHED (Int.Cl.7)					
H04L H04J H04B					
<p>The present search report has been drawn up for all claims</p>					
Place of search	Date of completion of the search	Examiner			
MUNICH	25 November 2002	Baltersee, J			
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			
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EP 02 25 5121

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25-11-2002

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0996262	A	26-04-2000	EP	0996262 A1	26-04-2000
US 4433424	A	21-02-1984	DE	3264622 D1	14-08-1985
			EP	0065630 A1	01-12-1982
			JP	57186858 A	17-11-1982
US 4677618	A	30-06-1987	CA	1234932 A1	05-04-1988
			DE	3687586 D1	11-03-1993
			DE	3687586 T2	19-08-1993
			EP	0197263 A2	15-10-1986
			JP	61236236 A	21-10-1986
US 5920897	A	06-07-1999	US	6173380 B1	09-01-2001

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